

## ***Focus. . Fatal Occupational Injuries in Missouri***

While accounting for an estimated four percent of the work force in Missouri, the agriculture, forestry and fishing industry records 21 percent of the work-related deaths. According to the Census of Fatal Occupational Injuries (CFOI) program, the largest number of these deaths are due to tractor use. As noted in the discussion below, the most frequent cause of death across all industries combined are transport-related incidents.

CFOI was developed by the United States Bureau of Labor Statistics to provide a nationwide count of work-related deaths that is based on a single set of definitions and standards. Each case is verified by at least two independent data sources to ensure that all of the deaths are included. The census was first conducted on a national basis in 1991 with 38 states participating. Missouri joined CFOI in 1992, and currently has three years of data available for analysis.

From 1992-1994, CFOI recorded 426 fatal workplace injuries in Missouri, an average of 142 a year (Table 1). Most of these deaths (91 percent) occurred in private industry. One in three were to individuals who were self-employed or working for family businesses. This was higher than expected based on their employment percentage of 10 percent. Deaths among farmers and other agriculture workers accounted for 57 percent of the deaths in the self-employed group.

Nine in ten occupational deaths were in males. Agriculture, farming and fishing accounted for the largest proportion of these (22%), followed by construction (16%) and transportation (16%). Deaths among females were more concentrated in a few industries. Nearly two-thirds of their 47 deaths occurred in the retail trade and service industries.

As table 1 indicates, the industry that accounted for the most deaths overall was agriculture, forestry, and fishing, with 21 percent of the deaths. These deaths tended to occur among older, male workers: over two-thirds were to workers age 55 or over (62 out of 90 deaths), and 94 percent were to males (85 deaths). A large proportion of the agriculture deaths (42 percent) involved tractors. Of these deaths, nearly half, or 17 deaths, were caused by rollovers. Tractors that were not in operation (rolling downhill, etc.) caused 6 more deaths (16%), and five deaths (13%) occurred when farmers were struck by the tractors after falling from them.

The transportation industry accounted for 15 percent of the occupational deaths, second highest after agriculture. Ninety-five percent of the deaths were in men. Truck drivers made up 34 of these 62 deaths, or 55 percent. The next largest group was drivers of other vehicles, which accounted for 6 deaths, or 10 percent of the transportation-related deaths.

Substantial numbers of occupational deaths also occurred in the construction and the retail trade industries. The construction industry was responsible for 14 percent of the deaths during 1992-1994. All 59 of the deaths in this industry were in males. The largest number of deaths were due to falls, which killed 16 workers (27%), and contact with objects and equipment, which killed 15 workers (25%). Deaths from exposure to harmful or noxious substances and deaths from transportation incidents were nearly as frequent. Exposure to harmful substances caused 13 deaths (22%), and transportation incidents caused 12 (20%).

The retail trade industry recorded 54 deaths, or 13 percent of the occupational deaths. Homicides were responsible for 33 of these deaths. Females accounted for one-third of the deaths in retail trade. They also accounted for 45 percent of the retail-related homicides. Firearms were the most frequent weapon used in retail homicides, with three-out-of-every-four involving a firearm. The most frequent location for homicides in the retail industry was gasoline stations (24 percent).

With the exception of wholesale and retail trade, industries that accounted for the most deaths also put workers at the highest risk of death. As table 2 shows, workers in the agriculture, forestry and fishing industries had the highest fatality rate in Missouri, 30.0 workers per 100,000 employed. This was followed by the construction industry with a rate of 19.9 /100,000. The transportation and utilities industry was third highest with a rate of 14.0/100,000. The number of fatalities among workers in the mining industry in Missouri is too small for calculation of reliable rates, but the U.S. rate of 26.0/100,000 points to a very hazardous industry. The safest industries were manufacturing; finance, insurance and real estate; and services. These industries had rates of 2.7 to 3.1/100,000 employed, or one-tenth the rate of agriculture workers.

Occupational fatality rates in Missouri industries are similar to those in the rest of the U.S. Only the rate for construction-industry workers was significantly higher in Missouri than in the U.S. (19.9/100,000 vs. 13.7/100,000, Table 2). The rate for agriculture, forestry and fishing appears to be higher in Missouri than in the U.S., 30.0/100,000 vs. 27.0/100,000, but the difference is not statistically significant.

The Census of Fatal Occupational Injury Program classifies events that cause injuries into a few major groupings and a number of subgroups (Table 3). In Missouri, 75 percent of the occupational deaths were due to just three of these causes. The most frequent cause of death was transport incidents. From 1992-1994 they accounted for 178 deaths, or 42 percent of occupational deaths. Only 41 of these deaths (23 percent) occurred in the transport industry; forty-six of the deaths (26 percent) occurred in agriculture, forestry and fishing.

After transport incidents, the next most frequent causes were contact with objects and equipment, and assaults and other violent acts. Each of these accounted for 17 percent of the deaths.

Deaths from a number of the causes appear to have increased substantially during the study period. Exposure to harmful substances accounted for 10 deaths in 1992 and 20 in 1994. Deaths from contact with objects and equipment increased 71 percent, from 17 to 29. Homicide by shooting increased by 42 percent, from 12 to 17. Missouri has not yet received 1994 industry employment estimates, so these rates of increase cannot be precisely tested; however, using the 1993 employment total to compute 1992 and 1994 death rates indicated that none of these increases were statistically significant. In addition, comparison of Missouri's three-year averages to the 1993 U.S. rates indicated that none of the causes accounted for a higher rate of deaths in Missouri than they did nationwide. Nevertheless, these causes bear further monitoring to determine whether they are increasing disproportionately.

In summary, three years of data collected through the CFOI program indicate that the agriculture, forestry and fishing industry put workers at the highest risk of death and also accounted for the largest number of occupational deaths. Tractors were a frequent cause of death, accounting for 42 percent of the deaths in the agriculture industry. Overall, transport-related incidents were the most frequent cause of death; they were responsible for 42 percent of all occupational deaths. With the exception of the construction industry, Missouri's rates were similar to the U.S. rates.

<p><b>Table 1</b></p> <p><b>Occupational Fatalities by Gender: Missouri 1992 - 1994 Combined</b></p>					
	<i>Male</i>		<i>Female</i>		<i>Total</i>
Total	379	47	426	(100)	
Private <sup>1</sup>	343	45	388	(91)	
Government	36	2	38	(9)	
Agriculture, Forestry & Fishing	85	5	90	(21)	
Mining	7	0	7	(2)	
Construction	59	0	59	(14)	
Manufacturing	36	4	40	(9)	
Transportation & Public Utilities	59	3	62	(15)	
Wholesale Trade	23	2	25	(6)	
Retail Trade	36	18	54	(13)	
Finance, Insurance & Real Estate	9	2	11	(3)	
Services	33	12	45	(11)	

<sup>1</sup> Private and Government refer to ownership of employment place, and sum to the total occupational deaths.

<p><b>Table 2</b></p> <p><b>Occupational Mortality Rate/100,000 Employed: Missouri vs. U.S., 1993</b></p>		
	<i>Missouri</i>	<i>U.S.</i>
Total Rate	5.2	5.7
Employment (thousands)	2,4812	120,791
<b>Private</b>		
Rate	— <sup>3</sup>	5.5
Employment	—	100,791
Government		

Rate	4.0	3.4
Employment	318	20,001
<b>Agriculture Forestry &amp; Fishing</b>		
Rate	30.0	27.0
Employment	100	3,172
<b>Mining <sup>4</sup></b>		
Rate	—	26.0
Employment	—	669
<b>Construction</b>		
Rate	19.9	13.7
Employment	99	6,724
<b>Manufacturing</b>		
Rate	3.1	3.9
Employment	435	19,444
<b>Transportation &amp; Public Utilities</b>		
Rate	14.0	12.9
Employment	148	6,867
<b>Wholesale &amp; Retail Trade</b>		
Rate	5.2	4.2
Employment	507	24,668
<b>Finances, Insurance &amp; Real Estate</b>		
Rate	3.1	1.5
Employment	119	7,728
<b>Services</b>		
Rate	2.7	2.4
Employment	559	31,516

<sup>1</sup>1993 rates are for Missouri’s 1992-1994 total occupational deaths per 100,000 employed in 1993, to provide more reliable rates; U.S. rate is for 1993, as reported by the Bureau of Labor Statistics, U. S. Department of Labor

<sup>2</sup>Employment is an annual average of employed civilians 16 years of age and older plus resident and Armed Forces , from the current population Survey; rates are experimental measures based on the latter survey.

<sup>3</sup>Rate and employment were not provided by The Bureau of Labor Standards.

<sup>4</sup>Rate and employment were not provided by the Bureau of Labor Standards due to small number of deaths.

Table 3

Occupational Fatalities by Cause and Year: Missouri, 1992 - 1994



	2,528	2,338	5.5	4.9	18,328	17,226	4.2	3.9	21,406	20,070	4.4	4.1	3.8
<b>Marriages</b>													
	4,509	3,951	9.8	8.3	38,750	38,342	8.8	8.7	44,944	44,662	8.5	8.5	8.4
<b>Dissolutions</b>													
	2,176	1,686	4.7	3.5	22,081	21,964	5.0	5.0	26,443	26,324	5.0	5.0	5.0
<b>Infant deaths</b>													
	45	40	6.4	5.9	487	457	7.7	7.4	595	569	8.5	7.9	7.7
<b>Population base</b>	...	...			...	...			...	...			
(in thousands)			5,278	5,298			5,278	5,298			5,227	5,271	5,295

\*Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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